NOTES.

SIR W. ROBERTS-AUSTEN, K.C.B., on leaving the chair as president of the Iron and Steel Institute, at the meeting on Wednesday, announced that Mr. Andrew Carnegie had increased the gift of 6500*l.*, which he made last year to the research fund of the Institute, to 13,000*l.*

AT the recent meeting of the U.S. National Academy of Sciences, Mr. Alexander Agassiz was elected president of the Academy. The Henry Draper Medal was awarded to Sir William Huggins for his work in astro-physics. The following were elected foreign associates:—Dr. J. Janssen, M. Lœwy, director of the Paris Observatory, M. E. Bornet, Prof. Hugo Kronecker, Prof. A. Cornu, Prof. F. Kohlrausch, Sir Archibald Geikie and Prof. J. H. van 't Hoff.

THE movement in Cambridge to secure a portrait of Prof. G. D. Liveing has already received large and influential support. The secretaries think that there are many friends of the professor both in Great Britain and abroad who would like to join in the proposal and who have not yet had notice of it. Such friends should apply to Prof. Lewis, Cambridge, who will be glad to receive their names.

MR. W. LANGDON has been nominated for election as the new president of the Institution of Electrical Engineers. M. Mascart has been elected an honorary member of the Institution.

PROF. ZEILLER, professor of palæobotany at the Paris School of Mines, has been elected a member of the section of botany of the Paris Academy of Sciences, in succession to the late M. Chatin.

A MEETING of the Institution of Mining Engineers will be held in the rooms of the Geological Society, Burlington House, on May 23-25, with Mr. H. C. Peake as chairman. Among the subjects of papers to be read or taken as read are the field-work of photographic surveying as applied in Canada; gold-dredging; the production of copper and its sources of supply; geology of the mineral deposits of the Transvaal; and auxiliary ventilation.

AN expedition against the Anopheles mosquito will be despatched this month to West Africa, under Major Ronald Ross, by the Liverpool School of Tropical Medicine. A leading Glasgow citizen has placed at the disposal of the school and Major Ross a sum of money sufficient to defray the expenses of one year's trial in some malarious city.

A SPECIAL committee has been appointed by the Trinity House, with the deputy-master, Captain G. R. Vyvyan, as chairman, to carry out numerous practical experiments with sound-producing instruments as coast fog signals at St. Catherine's Point, in the Isle of Wight, including comparisons between different forms of sirens and reed instruments sounded by means of compressed air, the observations being made from the Trinity steamer *Irene* at various distances and under varying conditions of weather, &c. The committee will have the advantage of Lord Rayleigh's advice and assistance in the investigations. Representatives of the Admiralty, the Board of Trade, and of the Northern and Irish Lighthouse Boards will also be present.

REFERENCE has frequently been made in these columns to the enlightened and progressive way in which agriculture is carried on in New South Wales and other Australian colonies. Every advantage is taken of modern methods, and the bearings of scientific investigations upon agricultural practice seem to be well appreciated. We are, therefore, not surprised to see in the *Natal Mercury* that Mr. F. R. Moor, Secretary for Native Affairs, who has been on a visit to Australia, has returned to Natal with strong convictions as to the urgent necessity for radical improvements in the methods of agricultural industry in that colony. It is acknowledged that in the past the colony has been depending more upon commercial business as a distributing medium for the interior States than on its productive resources; but the changing conditions demand that the productive capacity should be increased if Natal is to prosper. The obsolete methods of farming now adopted must give place to a system based upon science and carried on with appliances which modern inventive genius has placed at the disposal of agriculture. As Mr. Moor is a member of the Ministry, as well as a farmer of more than average ability, his visit to Australia should not only direct attention to the need for progress in the science and art of agriculture, but also lead to changes which will in the course of time bring Natal into line with other progressive colonies.

THE Board of Trade has given its decision in the inquiry held with reference to the regulation allowing the consumer to veto any change in the pressure at which he is supplied with electric energy. A summary of the evidence given at the inquiry has already appeared in NATURE (vol. lxiii. p. 587). As was generally anticipated the decision now given is in favour of the undertakers depriving the consumer of the absolute power of veto which he has hitherto possessed. In future, when the consumer shall refuse to consent to the change after the undertakers have offered to comply with the conditions laid down by the local authority and to pay the reasonable costs of making the change, the undertakers can appeal to the Board of Trade. The Board may give their consent to the change under such conditions as they may think fit, and this consent shall reckon as equivalent to the consent of the consumer. The Board may, if they consider it desirable, refer to a single arbitrator the question as to what terms and conditions it would be proper to impose, the arbitrator being appointed by themselves.

THE recent conversazione held by the American Institute of Electrical Engineers at Columbia University appears to have been a great success. According to an American contemporary, one of the most interesting exhibits was that made by Mr. P. C. Hewitt, who showed a number of electric vacuum-tube lamps. The lamps consist of glass tubes filled with mercury vapour, through which a current of electricity is passed. The positive electrode is of iron and the negative of mercury. The lamps are arranged to burn directly on the ordinary 100- or 200-volt lighting mains, but they need an extra high voltage to start them, this being obtained by the use of a Wehnelt interrupter or by other suitable means. The light is said to be very steady and brilliant, but poor in red rays; the disagreeable colour due to this defect can, it is stated, be avoided by the use of red reflecting screens. Lamps of 500 and 1000 candle-power were shown burning on the 115-volt direct current mains, the consumption of energy being only half a watt or less per candle. This is much in advance of any other artificial light, and if the lamps can be made commercially in a convenient form and for small candle-powers they should have a great future before them.

WE have received from Dr. J. M. Pernter, director of the Austrian Meteorological Service, an interesting account of the present state of modern "weather-shooting" as practised in Austro-Hungary and Italy—being a reprint of an article contributed to the journal *Die Kultur* (Vienna). The modern experiments were inaugurated by M. Stiger, Burgomaster of Windisch-Feistritz in Steirmark, and the apparatus, consisting of a mortar with a long funnel, was improved by M. Suschnig, of Graz. The theory is that by firing large charges of gunpowder a series of atmospheric rings or whirls are generated and that they penetrate the clouds with sufficient force to prevent the formation of hail, or to disperse it. The idea gained ground so rapidly that, at the present time, there are no less than some 1400 shooting stations in Hungary and many more similar stations in Italy. Dr. Pernter and others were delegated by the Austrian Ministry of Agriculture to witness and report upon the results of experiments as to the efficacy of the system. The experiments were made both in horizontal and vertical directions, with the result that in the horizontal direction the whirls which on leaving the mortar attained a velocity of, say, 170 miles an hour were reduced, at a distance of 80 to 100 metres, to less than 100 miles an hour, and in the vertical direction an initial velocity of 200 miles an hour was reduced to about 75 miles an hour at a height of about 110 metres. It was estimated by Dr. Pernter that the whirls would in no case reach a greater height than 400 metres. The only thing that can at present be positively asserted is that it is not impossible that the shooting may sometimes prevent hail; it is, however, improbable that the energy of the whirls—except under the most favourable conditions—can directly influence its formation.

THE unexpected death of Dr. Kohlstock, which occurred at Tientsin on April 15, causes a great loss to the medical department of the German Army, in which he was regarded as one of the best and ablest organisers. At the time of his death he was forty years of age and was sent, some months ago, to Tientsin, with a view to directing the military hospital there. Prof. Kohlstock will be best remembered in this country by the conspicuous part he played in 1896 in his capacity as Prof. Robert Koch's first assistant during the former's sojourn in South Africa for the purpose of investigating and combating the rinderpest. In Germany, however, his name is associated with several other by no means less important scientific researches. In 1890 he began some special bacteriological studies under the superintendence of Prof. R. Koch, and in the following year the "Seminar für orientalische Sprachen" was founded in Berlin, and Dr. Kohlstock, upon Prof. Koch's recommendation, became lecturer on tropical hygiene at that institute. To his connection, as a teacher, with this institute he mainly owes the title of professor, which was conferred upon him by the German Government in 1898. But his activity and interest were not confined to this work alone, indeed his subsequent appointment as a scientific adviser to the German Foreign Office in matters bearing upon tropical hygiene very largely increased his usual work and brought him into public prominence, with the result that he was soon requested by several private colonial associations to accept a post similar in character to that he held in connection with the Foreign Office, but he declined these offers. His scientific and literary contributions are numerous, but they are entirely devoted to the domain of clinical and bacteriological research in connection with malaria and yellow fever. One popular book, however, which he wrote about two or three years ago is likely to survive him for some time to come, namely, his "Aerztlicher Rathgeber für Ost-Afrika und andere tropische Malaria-Gegenden." Lastly, in conjunction with Prof. Koch he originated the scheme for the establishment of the so-called "Deutsche Anstalt für Tropen-Hygiene," which was recently erected in Hamburg.

MR. J. H. HART's Annual Report on the Royal Botanic Gardens of Trinidad for the year 1900 deals, as usual, with the botanical and meteorological work in the Gardens, and also the monthly rainfall statistics at some scores of points of observation throughout the island. Several seismographic records were supplied to Prof. Milne, the most important being that of the Caracas earthquake of October 29, the shock commencing suddenly, without any preliminary tremors, and agitating the instrument for two hours. In the herbarium several fungi and parasitic insects injurious to vegetation were under investigation, and also a disease occurring in the cacao plantations of Surinam. A course of agricultural education for elementary school teachers having been inaugurated appears to have proved highly successful, four courses being attended by 112 teachers and 10 cadets. Sugar cane experiments were confined to the raising and trial of new seedlings, and the cultivation of small areas of a few standard kinds for control purposes, no manurial experiments being attempted. From May 1899 to May 1900 there were 170 new canes analysed, 131 being Trinidad seedlings, the rest Demerara, Barbados and standard kinds. The question of the pollination of the cane by wind or insects is still unsettled, but it is found that the greatest variety and the best kinds of canes come from seed harvested where several distinct varieties are planted closely together. Notes are given on the experimental cultivation in the Gardens of rubber, nutmegs, coffee, oranges, guava and other plants. Botanical officials in other West Indian islands supplied as many as seventy varieties of sweet potatoes, but in all cases their yield was very poor.

IN his natural history notes Mr. Hart states that in the St. Ann's and Maraval rivers two species of small fish are found, one not so large as the English stickleback, the other slightly larger. They are commonly found in garden fountains and tanks, and both destroy the larvæ and eggs of mosquitoes. The question of the benefit of introducing these or similar fish into noted malarial districts is well worthy of consideration. It is a fact that the common gold-fish or carp does not increase in their presence owing to the smaller fish devouring the eggs of the larger. Gold-fish, however, are said to destroy mosquito eggs and larvæ. The study of living specimens of insects is rendered difficult by the behaviour of small ants, which attack and destroy nearly every form of insect. All experiments have, therefore, to be conducted in receptacles standing above water. In tapping Para rubber trees it is found that some of the coagulated rubber is cut up and carried away by a large species of black ant. Species of bees, genus Trigona, have also been observed carrying off the coagulated rubber fluid from the stems of *Castilloa elastica*. Similar species use resinous exudations from the *Garcinias* and other trees as ready-made wax for their nests, and in some cases actually cut the bark in such a manner as to cause a flow of the desired fluids.

THE April number of the *Journal of the Franklin Institute* contains the first part of a paper by Mr. Edwin Swift Balch, entitled "Antarctica: a History of Antarctic Discovery." In the introduction to his paper, the author says—"Not long since Sir Clements Markham proposed in the *Geographical Journal*, for November, 1899, to divide the Antarctic into four quadrants, each covering 90° of longitude, and to bear English names. The advantages of this proposition on the score of convenience are not self-evident. Moreover, it is only just to remember that, besides Englishmen, mariners of many other nations have made discoveries in the Antarctic. A letter that I wrote on this matter was published in the *Nation*, New York, May 10, 1900, and also in the *Evening Post*, New York, of the same date. Up to that time I had made no special study of Antarctic geography, and discovered then how difficult it was to find accurate data." In the present instalment the author covers, with considerable detail, (*a*) Voyages leading from a belief to a disbelief in a Terra Australis Incognita, and (*b*) Voyages up to the discovery of a South Polar Continent.

SIR MARTIN CONWAY has drawn up, in the form of a pamphlet entitled "The Rise and Fall of Smeerenburg, Spitsbergen," and privately printed, the results of much careful and laborious investigation into the history of the rival fisheries carried on in Spitsbergen during the seventeenth century. In 1614 the Noordsche or Greenland Company, which had obtained the monopoly of the whale fishery for the Dutch Republic, sent up a force "which the English, under Captain Joseph, were too weak to drive away." They sent some ships to Fairhaven, and probably settled on Amsterdam Island on the flat ground at its south-east angle, the site of the future Smeerenburg, or Blubbertown. Sir Martin Conway traces, so far as they can be traced, the fortunes of Smeerenburg, from its rise in the manner described, to its fall, or rather through its decline, when the whales began to find Fairhaven too dangerous for them. They "began to be shy of the Cookeries and anchorages of the ships, shallops, and what pertained to them; next of the bays, and then of the shallows along the coast, where they were constantly pursued," apparently about 1639; in 1646 "the season was only opened off Smeerenburg, and the whales were then followed to sea or along the north coast." By 1650 the whales had abandoned the banks and Smeerenburg became valueless as a place for trying-out the train-oil. As late as 1671 it remained a place of refuge for refitting ships, but twenty years later nothing was left but the foundations of a few houses. Sir Martin Conway gives many useful references to cartographical and other authorities, and adds a section on the topography and nomenclature of Fairhaven and its neighbourhood.

THE Geological Survey of India has attached to its staff as "Mining Specialist" Dr. F. H. Hatch, who has lately reported on the Kolar gold-field in Mysore (*Memoirs*, vol. xxxiii. part 1, 1901). The auriferous lodes consist of a series of parallel quartz veins in the Dharwar schists, and they conform generally to the direction of the foliation planes of these rocks. They are therefore regarded as "bedded veins," formed by the deposition of quartz and other minerals from solution along open channels or planes of weakness which in general coincided with the foliation of the schists. To this fact is ascribed their lenticular character; they swell and pinch at irregular intervals. As a rule, gold is not visible in the hand-specimens of quartz, which is of a dark bluish-grey colour. In places the quartz has been subject to great stress consequent on the bending of the vein into acute folds, and there it has a well-developed banded or laminated structure. Along the axes of the folds, where the vein is doubled back on itself, large and valuable bodies of ore are found; and where slickensides have been formed by differential movements in the vein, the gold sometimes occurs as a fine film on the smoothed and polished surface. Dr. Hatch deals exhaustively with the methods of working and production of this gold-field.

THE two leading formulæ at present in use in performing interpolations by central differences are due to Newton. In a note reprinted from the *Journal* of the Institute of Actuaries, xxxv. p. 452, Prof. Everett proposes a new formula containing only even differences, which appears to be very simple and convenient.

M. PELLAT contributes to the *Journal de Physique* (April) a short note on the laws of nature in which he points out, as a consequence of the principle of degradation of energy, that, as applied to the universe, the notion of infinite time necessitates that of infinite space.

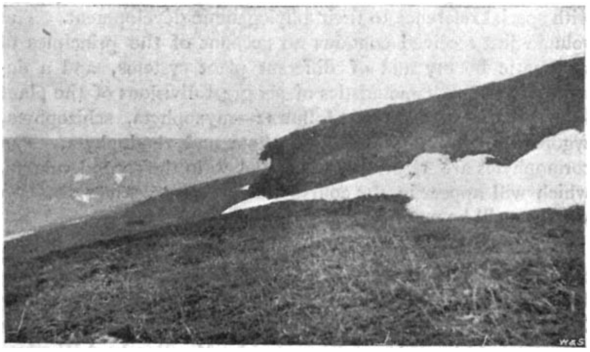
MR. J. A. THIRD contributes to *Mathesis*, 1900, a short note on trihomologous triangles. Such triangles have three centres of homology, in each of which the lines joining the vertices of one triangle to those of the other are concurrent, the three centres being got by joining different vertices taken in order. They therefore have three axes of homology, on each of which lie the three points of intersection of three sides of the one with three sides of the other. The theorems now proved relate to certain conics connected with the two triangles and lead to a number of particular cases including certain properties of Steiner's ellipse.

To the May issue of the *Entomologists' Monthly Magazine* Sir George Hampson contributes a long list of abnormalities among Lepidoptera, as illustrated by a series of specimens recently presented to the British Museum by Mr. South, who had spent many years in collecting them.

DR. C. S. MINOT sends us a copy of "Notes on Anopheles," which recently appeared in the *Journal* of the Boston Society of Medical Science (vol. v. p. 325). They are based upon observations made upon the larvæ of these mosquitoes by the author so long ago as 1879, and are illustrated by excellent figures of the larvæ and pupæ of Anopheles and Culex. These observations, it is believed, are the earliest which have been made on the first stages of the life-history of the two insects, and accord well with those recently recorded by other writers.

To the same author we are indebted for a report (from *Science*) of his Middleton Goldsmith lecture delivered before the New York Pathological Society on March 25. The subject is the embryological basis of pathology, the lecturer claiming that a scientific study of pathological phenomena is in a greater degree a superstructure upon embryology than it is upon anatomy. "The fundamental problems of pathology and embryology are," it is urged, "alike, not only in being problems of cell life, but also in being similar and even identical problems of cell life. Widely as the two sciences differ, they rest on a common foundation."

WE have received information of the occurrence of a considerable landslip in Danby Dale, a deep valley drained by a tributary of the Esk in the moorlands of East Yorkshire, about seven miles west of Egton. The region is one in which many landslips have from time to time occurred, owing to the undermining and breaking away of the Dogger and Lower Estuarine Sandstones and Shales which overlie the Alum Shale. In the present instance, the slip appears to have affected about sixty acres of ground, while the fissure along which the subsidence took place extended for a distance of more than half a mile. The fall represented in the accompanying picture, reproduced from a photograph taken by Mr. George A. Macmillan, is about ten or twelve feet high. The fissure at the foot was filled with snow when the photograph was obtained.



A BEAUTIFUL coloured plate illustrating the remarkable resemblance presented to their inanimate surroundings by certain spiders forms the most attractive feature of vol. xxxi. part 2 of the *Travaux* of the Imperial Society of Naturalists of St. Petersburg. It accompanies an article, by Dr. W. A. Wagner, on colouring and mimicry among animals, of which there is a summary in German, the full text being in Russian. In several instances the spiders are represented on lichen-clad bark, the resemblance being most remarkable in the case of a species of Epeira on very dark bark shown in Fig. 7. Still more curious is a blue spider of the same genus nestling amid a rosette of azure lichen. Other examples show white or yellow spiders in flowers of similar colour, the resemblance being most complete in the case of a Vatia, whose yellow body is spotted with red to accord with a yellow and red flower. After tracing the gradual evolution of this type of "mimicry" among spiders from the dull-coloured to the bright-hued species, the author refers to certain well-known difficulties as to the origin of resemblances of this nature.

A LARGE Mycenæan *pithos* in the First Vase Room, British Museum, was inadvertently stated on p. 13, col. 1, line 6 from bottom, to have come from Ialysos in Rhodes. In reality it was brought from Knôssos itself by Mr. Minos Kalochairinos, who essayed several excavations at Kephala in years gone by.

WE learn, from the *Journal of Botany*, that a new society, to be called the International Botanical Association, is to be inaugurated at a meeting to be held in the botanical laboratory of the University of Geneva on August 7. The chief object of the Association will be "the foundation of a bibliographic periodical, criticising in a perfectly impartial manner all botanical publications. . . . The criticisms will, at the desire of the contributors, be published in English, French or German." The editor, who will be responsible to the Association for this absolute impartiality and the cyclopædic knowledge which it involves, will be Dr. J. P. Lotsy, of Wageningen, Holland; and the subscription to the Association, including the periodical, is not to exceed 25*s*. per annum.

THE first volume of a "Handbuch der systematischen Botanik," by Prof. R. R. v. Wettstein, has been published by Herr Franz Deuticke, Leipzig and Vienna. The chief object of the work is to present a view of the various forms of plants, with special reference to their phylogenetic development. The volume just received contains an account of the principles of systematic botany and of different plant systems, and a description of the characteristics of six great divisions of the plant kingdom, distinguished as follows:—myxophyta, schizophyta, zygophyta, euthallophyta, phaeophyta and rhodophyta. The cormophytes are reserved for treatment in the second volume, which will appear in the course of next year, when the two volumes will be noticed together.

THE additions to the Zoological Society's Gardens during the past week include three African Sheep (*Ovis aries*) from Bida Nigeria, a Bateleur Eagle (*Helotarsus ecaudatus*) from Zebba Nigeria, presented by Mr. Fanshawe Abadie; a Lion (*Felis leo*, ♂) from Africa, presented by Mr. Rowland Ward; a Chough (*Pyrrhocorax graculus*), British, presented by Mr. W. H. St. Quintin; a Black-pointed Teguexin (*Tupinambis nigropunctatus*) from South America, presented by Mr. G. P. Ogg; a Turkish Gecko (*Hemidactylus turicius*) from Western Asia, presented by Miss Kensington; six Ceylonese Terrapins (*Nicoria trijuga*), a Changeable Lizard (*Calotes versicolor*) from India, three Blue-tongued Cyclodus (*Tiliqua scincoides*), three Black and Yellow Cyclodus (*Tiliqua nigro-luteus*) from Australia, a Chained Snake (*Coluber catenifer*) from California, two Ten-lined Snakes (*Contia decemlineata*) from North America, two —— Snakes (*Contia rothi*) from Syria, four Lacertine Snakes (*Coelopeltis monspessulana*), four Vivacious Snakes *Tarbophis follax*), an Æsculapian Snake (*Coluber longissimus*), a Dahl's Snake (*Zamenis dahli*), two Dark Green Snakes (*Zamenis gemonensis*), a Common Snake (*Tropidonotus natrix*, var.) two Glass Snakes (*Ophiosaurus apus*), South European, two —— Ground Snakes (*Typhlops vermicularis*) from Asia Minor, a Black-necked Stork (*Xenorhynchus australis*) from Malacca, deposited; two Smews (*Mergus albellus*), a Velvet Scoter (*Ædemia fusca*), four Wigeon (*Mareca penelope*), European, purchased.

OUR ASTRONOMICAL COLUMN.

COMET *a* (1901).—A further telegram concerning the new comet has been received from Kiel announcing its observation at Arequipa, in Peru, on May 2, at 6h. 48·6m. p.m. Its position then was

$$\begin{array}{l} \text{R.A.} = 3\text{h. } 30\text{m.} \\ \text{Decl.} = -\ 1^\circ\ 0'. \end{array}$$

A later telegram gives particulars of another observation at the Cape at the position

$$\left.\begin{array}{l} \text{R.A.} = 3\text{h. } 54\text{m. } 29\text{s.} \\ \text{Decl.} = -0^\circ\ 18'\ 27'' \end{array}\right\} \text{1901 May 4d. 6h. 28·8m.}$$

$$\begin{array}{l} \text{Daily Motion in R.A.} = +14\text{m.} \\ \text{,,} \qquad \text{,, Decl.} = +13'. \end{array}$$

It has been observed at Eastbourne by Mr. Chambers, who saw it about 3.0 a.m. on May 2. Reports in the daily Press also state its frequent observation at Melbourne and the Cape, but its motion is there stated to be north-westerly.

STELLAR PHOTOGRAPHY WITH A SIDEROSTAT.—Some little interest has been evinced during the past few months in connection with the practical elimination of the rotation of the field which occurs when a siderostat is used to follow the diurnal motion. In *Comptes rendus* (vol. cxxxii. pp. 931–932) Prof. Lippmann suggests a mechanical contrivance, to be attached to the slide carrying the photographic plate, which shall be so geared to the driving mechanism of the siderostat itself as to compensate for the rotation of field.

Prof. Cornu, in the same number, pp. 1013–1017, calls attention to a method he has previously recommended and which he thinks very good as regards mechanical efficiency. The essential factor is the employment of a universal joint, the angle between the component axes depending on the polar distance of the direction of the reflected beam. The plate holder is rotated by means of a subsidiary mechanism through the medium of the joint. He was led to the device by having to design a mechanism to represent a formula in connection with polarised light in isotropic and other media, this formula being of the same type as that showing the rotation of field of a siderostat.

From Prof. Cornu's suggestions M. Gautier constructed the necessary apparatus for this purpose, which is used with the 50-inch refractor shown at the Paris Exhibition of 1900.

FORMULÆ FOR VARIATION OF LATITUDE.—The observations of latitude made by Profs. Doolittle and Gratchof (*Astronomical Journal*, Nos. 490 and 495) lead Prof. S. C. Chandler to consider that they afford evidence of changes in the annual component of latitude variation; he therefore proposes to include such changes in the numerical theory, and gives formulæ and tables of reduction which may be used for such observations (*Astronomical Journal*, No. 495).

POSITION OF NOVA PERSEI.—Prof. E. C. Pickering gives, in the *Astronomische Nachrichten* (Bd. 155, Nǒ. 3706), the following mean position adopted from numerous measures with the transit circle at Harvard College Observatory:

$$\left.\begin{array}{l} \text{R.A.} = 3\text{h. } 24\text{m. } 28\cdot10\text{s.} \\ \text{Decl.} = +\ 43^\circ\ 33'\ 54''\cdot8 \end{array}\right\} (1901\cdot0).$$

PHOTOGRAPHS OF THE ZODIACAL LIGHT.—In *Popular Astronomy* for April Mr. A. E. Douglass, of the Lowell Observatory at Flagstaff, Arizona, describes some successful photographs of the western zodiacal cone which he was fortunate enough to obtain on February 13 of this year.

The lens he employed was made in 1899 by Messrs. Alvan Clark and Sons especially for this purpose; its aperture is 0·9 inch, focus 1·8 inches, the intensity being thus 1:2.

Previous to this date many exposures had been made of an hour or more, but the short exposure tried on the 13th was most successful. It appears that when the zodiacal light is at its best, exposures of about eight minutes are ample; when not so clear, about thirty minutes should suffice. Glycin or hydroquinone were found most trustworthy for development, the former being especially free from any tendency to produce general fogging of the plate. Reproductions from three of the photographs taken at intervals of a few minutes accompany the paper. They all show some trace of condensation about the centre of the illuminated cone.